

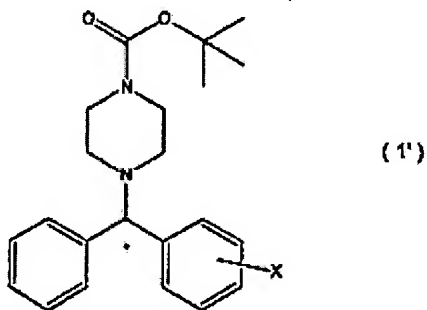
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

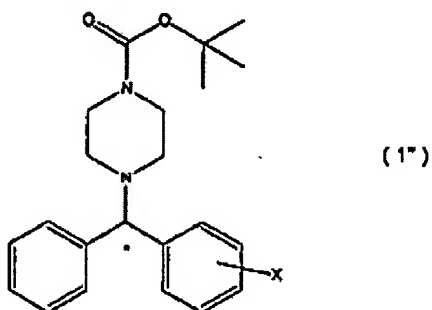
1. (currently amended): An optically active 4-(tert-butoxycarbonyl)piperazine

a² compound of formula (1'):



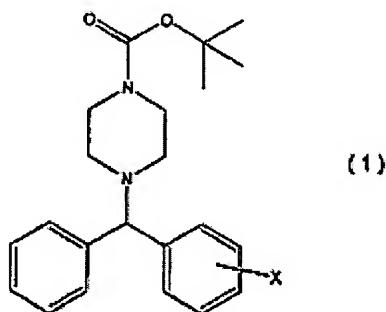
wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group and *
~~designate~~ designates an asymmetric carbon atom.

2. (currently amended): A composition comprising an optical isomer of formula
(1''):



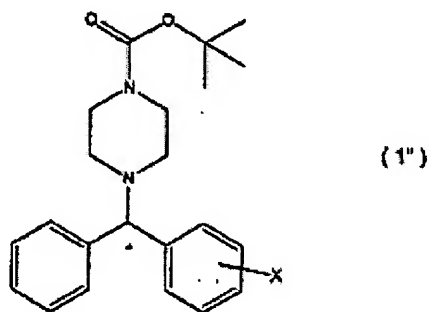
wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group and *
~~designate~~ designates an asymmetric carbon atom, and an enantiomer thereof, ~~in an optional ratio~~
wherein one optical isomer is present in excess to the enantiomer thereof.

3. (original): A 4-(tert-butoxycarbonyl)piperazine compound of formula (1):



wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group.

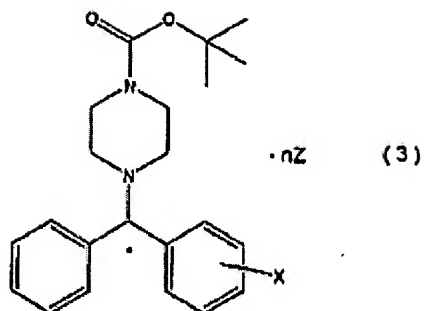
4. (currently amended): An optical isomer of formula (1''):



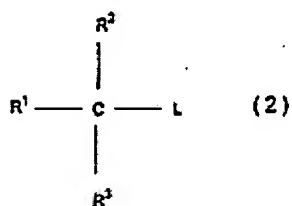
wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group and *
~~designate~~ designates an asymmetric carbon atom, or salts thereof.

5. (withdrawn): An adduct salt of formula (3):

Q2



wherein X denotes a chlorine atom, a C1- C3 alkyl group or a C1-C3 alkoxy group and * designate an asymmetric carbon atom, n represents an integer of 1 or 2, and Z represents an optically active acid of formula (2):



wherein L represents -COOH or -SO₃H,

R² represents a hydrogen atom or a hydroxyl group,

R¹ and R³ are the same or different and each independently represent

a hydrogen atom, a halogen atom, an arylcarbonyloxy group;

a linear or branched alkyl group which may be substituted with at least one group selected from a hydroxyl group, a halogen atom, an arylcarbonyloxy group, a carboxy group and an arylaminocarbonyl group;

an aryl group which may be substituted with at least one group selected from a halogen atom, an alkyl group and an alkoxy group;

an aralkyl group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group;

Q² an aryloxy group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group;

a cyclic alkyloxy group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group; or

a cyclic alkyl group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group, a hydroxyl group and a phenylcarbonylamino group; or

R¹ and R³ may be bonded together to form

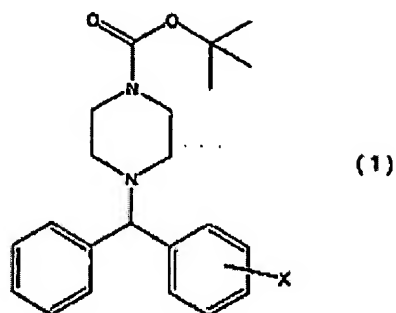
an alkylene group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group, a carboxyl group, an oxo group, a hydroxyl group, and a phenylcarbonylamino group, or

a heterocycle which may be substituted with at least one group selected from an alkyl group, alkoxy or a halogen atom.

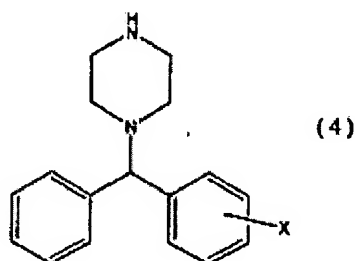
6. (withdrawn): An adduct salt according to claim 5, wherein the acid of formula (2) is optically active O,O'-dibenzoyltartaric acid.

7. (withdrawn): An adduct salt according to any one of claims 1, 2, 3, 4, 5, or 6, wherein X represents a chlorine atom at 4-position of the phenyl group.

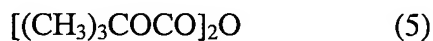
8. (withdrawn): A process for producing a 4-(tert-butoxycarbonyl)piperazine compound of formula (1):



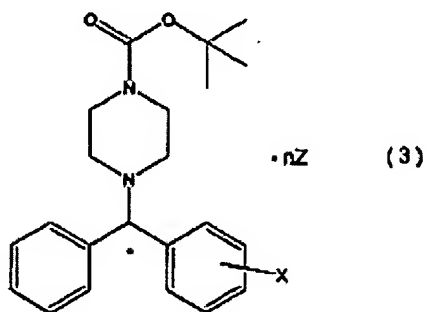
wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group, which comprises reacting 1-[(substituted phenyl) phenylmethyl]piperazine of formula (4):



wherein X has the same meaning as defined above, with di-tert-butyl dicarbonate of formula (5):

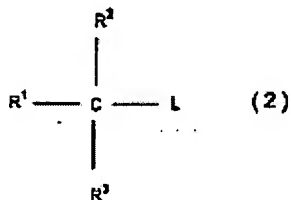


9. (withdrawn): A process for producing an optically active adduct salt of formula (3):



wherein X denotes a chlorine atom, a Cl-C3 alkyl group or a Cl-C3 alkoxy group, * represents an asymmetric carbon atom, and n represents an integer of 1 or 2, and

Z represents an optically active acid of formula (2):



wherein L represents --COOH or --SO₃H,

R² represents a hydrogen atom or a hydroxyl group;

R¹ and R³ are the same or different and independently represent

a hydrogen atom, a halogen atom, or an arylcarbonyloxy group;

a linear or branched alkyl group which may be substituted with at least one group

selected from a hydroxyl group, a halogen atom, an arylcarbonyloxy group, a carboxy group and an arylaminocarbonyl group;

an aryl group which may be substituted with at least one group selected from a halogen atom, an alkyl group and an alkoxy group;

an aralkyl group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group;

an aryloxy group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group;

a cyclic alkyloxy group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group and a hydroxyl group; or

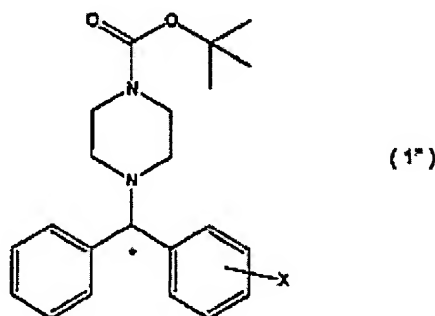
a cyclic alkyl group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group, a hydroxyl group and a phenylcarbonylamino group; or

Q2 R¹ and R³ may be bonded together to form

an alkylene group which may be substituted with at least one group selected from a halogen atom, an alkyl group, an alkoxy group, a carboxyl group, an oxo group, a hydroxyl group, and a phenylcarbonylamino group, or

a heterocycle which may be substituted with at least one group selected from an alkyl group, an alkoxy group and a halogen atom,

which comprises reacting a composition comprising an optical isomer of 4-(tert-butoxycarbonyl)piperazine compound of formula (1''):

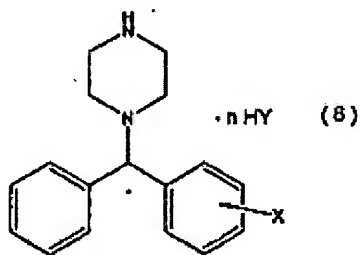


wherein X and * designate the same as defined above, and an enantiomer thereof, with an optically active acid of formula (2) as defined above.

10. (withdrawn): A process according to claim 9, which further comprises recrystallizing the acid adduct salt of the optically active 4-(tert-butoxycarbonyl)piperazine of formula (3).

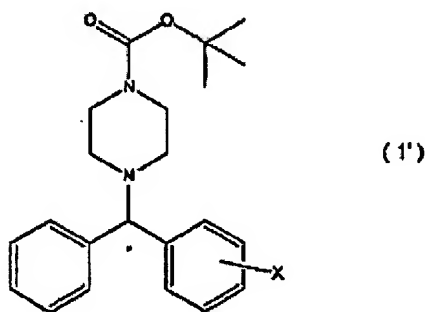
11. (withdrawn): A process according to claim 9 or 10, which further comprises reacting an adduct salt of formula (3), with a base to produce an optically active 4-(tert-butoxycarbonyl)piperazine of formula (1').

12. (withdrawn): A process for producing an adduct salt of formula (6):



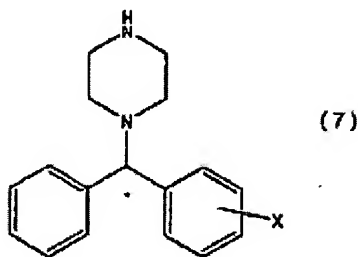
wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group, * represents an asymmetric carbon atom, and n represents an integer of 1 or 2,

Y represents a halogen atom, --OSO₃H, --OSO₂CH₃, --OCOCF₃, --OCOCH₃ and --QCOH, which comprises reacting an optically active 4-(tert-butoxycarbonyl)piperazine of formula (1'):

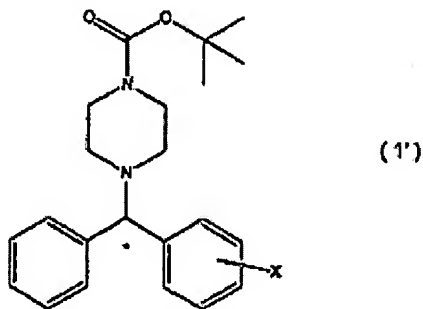


wherein X and * designate the same as defined above, with an acid of formula: HY, wherein Y represents the same as defined above.

13. (currently amended): A process for producing an optically active 1-[(substituted phenyl)phenylmethyl]piperazine of formula (7):



wherein X and * each have the same meaning as defined above denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group, and * represents an asymmetric carbon atom, which process comprises reacting an optically active 4-(tert-butoxycarbonyl)piperazine compound of formula (1'):



wherein X denotes a chlorine atom, a C1-C3 alkyl group or a C1-C3 alkoxy group, and * represents an asymmetric carbon atom, with an acid and subsequently with a base.
